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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/847,658 | 05/02/2001 | Wolfgang Singer | 82704 | 7054 |

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Gerald T. Shekleton, Esq.
Welsh & Katz, Ltd.
120 S. Riverside Plaza, 22nd Floor
Chicago, IL 60606

[REDACTED] EXAMINER

CHOI, WILLIAM C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2873 | |

DATE MAILED: 12/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/847,658 | SINGER ET AL. <i>M</i> | |
| | Examiner | Art Unit | |
| | William C. Choi | 2873 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 October 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,5,19-25,28-30,33 and 37-39 is/are rejected.
- 7) Claim(s) 4,6,7,26,27,31,32,34-36 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 02 May 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). *Loha Ben*
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group 1, Claims 1-7 and 19-39 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the claims of the device and the claims of the method are so interlinked as to require that searching be conducted in identical classes. This is not found persuasive because Group 1, claims 1-7 and 19-39, is drawn to a projection lens or lens system, having a gas chamber connected with a pressure or gas composition change means classified in class 359, subclass 667, while Group 2, claims 8-18, is drawn to a projection lens having a specific arrangement comprising 5 lens groups and a sixth optical group satisfying the claimed conditions classified in class 359, subclass 754.

The requirement is still deemed proper and is therefore made FINAL.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

Receipt of the Information Disclosure Statement (IDS) with the copies of the references cited therein was received on July 16, 2001. An initialized copy of the IDS is enclosed with this office action.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "4a" has been used to designate both a "multiplicity of lenses" (page 7, line 27) and "the last lens" (page 8, lines 15-16). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1-3 and 35 are objected to because of the following informalities: line 6 of each claim discloses wherein the "manipulation chamber **in** connected... ". For purposes of examination as well as provide clarity, "**in**" was changed to "**is**".

In claim 35, line 1, applicant discloses a "**Method**", when claim 27, which it is dependent from, discloses a "**System**". For purposes of examination, it was assumed applicant meant "System" to maintain consistency with its parent claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 recites the limitation "**the** sixth optical group" in line 4. Claim 25 is dependent on claim 19, where there is no prior mention of a sixth optical group. There

is insufficient antecedent basis for this limitation in the claim. For purposes of examination, it was assumed applicant meant "a sixth optical group", keeping consistent with claims 26 and 27.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in–
 - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
 - (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 5, 19, 22, 28 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al (U.S. 6,235,438 B1).

In regards to claims 1, 19 and 37, Suzuki et al discloses a system for projection lens for microlithography (Abstract, column 1, lines 11-21 and column 2, lines 45-47, Figure 7), having an object and image plane (Figure 7), having a lens arrangement (column 22, lines 12-13, Figures 7 and 8, "216") and having at least one gas chamber filled with gas or through which gas flows (column 24, line 62 – column 25, line 1), wherein that the gas chamber is constructed as an at least approximately plane-parallel manipulation chamber (column 24, line 62 – column 25, line 6, Figure 7, "218A), and wherein the manipulation chamber is connected with pressure change means (column

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24, line 66 – column 25, line 3, Figure 7, "219A) and wherein the refractive index can be varied in the manipulation chamber (column 56, lines 41-45).

Regarding claim 5, Suzuki et al discloses wherein the manipulation chamber is located in the lens arrangement (column 24, line 62 – column 25, line 2, Figure 7, "218A").

Regarding claim 22, the offset of the refractive index would inherently be set via the gas composition is such a way that the refractive index can be manipulated in both directions, this being reasonably assumed from Taniguchi disclosing the composition change correcting distortion of a projected image (column 8, line 65 – column 9, line 16), which would require the refractive index being able to be manipulated in both directions.

Regarding claim 28, Suzuki et al further discloses a projection exposure machine in microlithography (Abstract and column 1, lines 11-22), which outputs radiation of wavelengths shorter than 370 nm (column 9, lines 62-65), where it comprises said projection lens (column 2, lines 42-44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 20, 23 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al, and further in view of Taniguchi.

In regards to claims 2, 20 and 38, Suzuki et al discloses a system for projection lens for microlithography (Abstract, column 1, lines 11-21 and column 2, lines 45-47, Figure 7), having an object and image plane (Figure 7), having a lens arrangement (column 22, lines 12-13, Figures 7 and 8, "216") and having at least one gas chamber filled with gas or through which gas flows (column 24, line 62 – column 25, line 1), wherein that the gas chamber is constructed as an at least approximately plane-parallel manipulation chamber (column 24, line 62 – column 25, line 6, Figure 7, "218A), but does not specifically disclose wherein the manipulation chamber is connected with a gas composition change means. Within the same field of endeavor, Taniguchi teaches that the composition of gas in a sealed air chamber within a projection optical system can be changed in order to correct the distortion of a projected image (column 8, line 65 – column 9, line 16), which inherently would vary the refractive index within the chamber. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the manipulation chamber of Suzuki et al to be connected with a gas composition change means since Taniguchi teaches that the composition of gas in a sealed air chamber within a projection optical system can be changed in order to correct the distortion of a projected image.

Regarding claim 23, the offset of the refractive index would inherently be set via the gas composition is such a way that the refractive index can be manipulated in both directions, this being reasonably assumed from Taniguchi disclosing the composition

change correcting distortion of a projected image (column 8, line 65 – column 9, line 16), which would require the refractive index being able to be manipulated in both directions.

Claims 3, 21, 24 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al, and further in view of Taniguchi.

In regards to claims 3, 21 and 39, Suzuki et al discloses a system for projection lens for microlithography (Abstract, column 1, lines 11-21 and column 2, lines 45-47, Figure 7), having an object and image plane (Figure 7), having a lens arrangement (column 22, lines 12-13, Figures 7 and 8, "216") and having at least one gas chamber filled with gas or through which gas flows (column 24, line 62 – column 25, line 1), wherein that the gas chamber is constructed as an at least approximately plane-parallel manipulation chamber (column 24, line 62 – column 25, line 6, Figure 7, "218A), but does not specifically disclose wherein the manipulation chamber is connected with a pressure change means and gas composition change means. Within the same field of endeavor, Taniguchi teaches that both pressure and composition of gas in a sealed air chamber within a projection optical system can be changed in order to correct the distortion of a projected image (column 8, line 65 – column 9, line 16), which inherently would vary the refractive index within the chamber. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the manipulation chamber of Suzuki et al to be connected with a pressure change means and gas composition change means since Taniguchi teaches that both pressure and

composition of gas in a sealed air chamber within a projection optical system can be changed in order to correct the distortion of a projected image.

Regarding claim 24, the offset of the refractive index would inherently be set via the gas composition is such a way that the refractive index can be manipulated in both directions, this being reasonably assumed from Taniguchi disclosing the composition change correcting distortion of a projected image (column 8, line 65 – column 9, line 16), which would require the refractive index being able to be manipulated in both directions.

Claims 29, 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al, and further in view of Ohno (U.S. 4,676,614)

In regards to claim 29, Suzuki et al discloses a method for producing microstructured components, in the case of which a substrate provided with a light-sensitive layer is exposed to UV light by means of a mask and a projection exposure machine with a lens arrangement (Abstract and column 1, lines 10-22 and column 2, lines 31-41), wherein an at least approximately plane-parallel manipulation chamber is created in the projection exposure machine, the refractive index being manipulated by pressure changes and/or changes in gas composition (column 24, line 62 – column 25, line 3) but does not specifically disclose wherein the manipulation chamber is connected to a gas source. Within the same field of endeavor, Ohno teaches it being desirable to have a gas source connected to a sealed plane-parallel gas chamber for the purpose of regulating air pressure within the chamber (column 3, lines 31-37). Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made for the manipulation chamber of Suzuki et al to be connected to a gas source since Ohno teaches it being desirable to have a gas source connected to a sealed plane-parallel gas chamber for the purpose of regulating air pressure within the chamber.

Regarding claim 30, Suzuki et al further discloses wherein the manipulation chamber is installed in the projection lens on the input side of the lens arrangement or on the side of the mask (column 24, line 62 – column 25, line 2, Figure 7, "218A").

Regarding claim 33, Ohno further teaches wherein the plane-parallel manipulation chamber is sealed off from the surroundings (column 2, lines 8-16, Figure 1, "13" and "14") and in that the gas mixture is led to the chamber in a controlled fashion via a pressure connection (column 3, lines 31-45, Figure 1, "28").

Allowable Subject Matter

Claims 4, 6, 7, 26, 27, 31, 32, 34 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 4: a projection lens as claimed, specifically wherein the manipulation chamber is located between the lens arrangement and the image plane.

The prior art fails to teach a combination of all the claimed features as presented in claim 6: a projection lens as claimed, specifically wherein the manipulation chamber is arranged between an end plate and the lens situated adjacent to the end plate.

The prior art fails to teach a combination of all the claimed features as presented in claim 7: a projection lens as claimed, specifically wherein an end plate of the lens arrangement is bipartite, and wherein the two end plate parts are arranged at a spacing from one another and form the manipulation chamber between them.

The prior art fails to teach a combination of all the claimed features as presented in claims 26, 27 and 36: a system for projection lens as claimed specifically wherein a further at least approximately plane-parallel manipulable gas interspace is provided in addition to the manipulation chamber in a sixth optical group.

The prior art fails to teach a combination of all the claimed features as presented in claim 31: a method for producing microstructured components as claimed specifically wherein the manipulation chamber is installed on the output side of the lens arrangement or on the side of the wafer.

The prior art fails to teach a combination of all the claimed features as presented in claim 32: a method for producing microstructured components as claimed specifically wherein the manipulation chamber is installed between the lens arrangement and the image plane.

The prior art fails to teach a combination of all the claimed features as presented in claim 34: a method for producing microstructured components as claimed specifically

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wherein when the projection lens is being tuned a filling gas is introduced which is subsequently exchanged by the operator for a gas mixture.

Claim 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 25: a system for projection lens as claimed specifically wherein a further at least approximately plane-parallel manipulable gas interspace is provided in addition to the manipulation chamber in a sixth optical group.

Claim 35 would be allowable if rewritten to overcome the objection set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 35: a system for projection lens as claimed specifically wherein a further manipulable gas interspace is provided in addition to the manipulation chamber by means of which a field curvature on the substrate to be exposed can be removed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-

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3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

W.C.

William Choi
Patent Examiner
Art Unit 2873
December 23, 2002



Loha Ben
Primary Examiner